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ABSTRACT

This booklet, which is intended for general readers wishing to understand important trends in vocational education and training (VET) in Australia, provides an overview of the basic issues in online delivery of VET. The following topics are discussed in the booklet's first six sections: (1) basic principles of online delivery; (2) benefits and problems of using online delivery; (3) steps in getting started (planning, equipment needed, server hardware, equipment selection, technical support, costs); (4) issues in instructional and interface design; (5) managing student and teacher support; and (6) evaluation. The seventh section lists the steps to ensure the success of online delivery programs: (1) ensure that the online delivery strategy is compatible with the institution's long-term educational goals; (2) select committed, enthusiastic academic and support staff and an effective high-level champion; (3) ensure that a well-developed institutional information technology infrastructure is in place; (4) undertake staff and student training that includes change management and an explanation of how online delivery really works; (5) ensure efficient, 24-hour, 7-day-a-week access to reliable technology with a good user interface and ongoing maintenance of modules; and (6) evaluate what works and what does not. Concluding the booklet are a glossary and 42-item annotated bibliography. (MN)

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Getting to **grips** with **online delivery**

Di Booker

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The author wishes to dedicate this publication to the late Sue Goldman.

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Introduction

During the last 30 years many changes in the level of use of technology have influenced the delivery of education and training programs. As a simple progression, when I was a student, lecturers used 'chalk and talk'. Then when I began working in TAFE, I discovered that pictures and sound were aids to the blackboard, and classrooms and lecture theatres were fitted out with facilities to display TV programs and video recordings. More recently, computer systems and (generally) stand-alone packages were included in the suite of delivery methods. The latest development has been loosely labelled 'online delivery' and includes the Internet and the World Wide Web (WWW) as teaching and learning platforms.

Internet: 'the global communications network providing interconnections between thousands of smaller networks throughout the world'.

World Wide Web: 'its outstanding features include an easy-to-use point-and-click interface for the transmission of graphics, sound, animation and video, and ready access to a vast range of communication and information services'. (Wheeler 1996, p.1)

At the 1997 Networking97 conference, Ian Reinecke presented the thesis 'that the Internet will be the development that triggers a transformation of vocational education ... (and) will become the catalyst for transformation of organisations (including education). The wide range of purposes to which it is being put, its geographical reach and the rapid growth in the number of users around the world are reasons for regarding the Internet as more than usually important. It has the considerable advantage of being available both to providers and users of services at relatively low cost and its appeal shows no signs of waning' (Reinecke 1997, p.6).

These technological changes have been accompanied by educational paradigm shifts, including notably, for the vocational education and training (VET) sector, the influence of flexible delivery methodologies. The results include:

- constructivist principles of teaching and learning replacing conventional instructivist philosophies
- students becoming more responsible for specifying and managing their own learning activities
- teaching and learning resources accessed globally
- an increasing use of information communications technology as a platform for educational delivery—or the use of online delivery technology (Barker 1999, pp.3–4)

Resource

The global context of online delivery or 'the virtual institution' is outlined in a recent Commonwealth of Learning report *The development of virtual education: A global perspective* (Farrell 1999).

Forces driving the development of online delivery include:

- increasing capacity, flexibility and suitability of information and communications technologies in educational applications
- decreasing cost of technology
- growth of knowledge and increasing rate of obsolescence of knowledge
- people seeking opportunities for lifelong learning and greater flexibility in how they learn
- opportunities to enhance learning experiences
- overcoming the tyranny of distance
- increasing market share in a competitive environment
- expectation that costs will be reduced

Forces opposing the development of online delivery include:

- no or limited access to technology and networks
- high start-up costs for the institution and learner
- copyright restrictions
- inappropriate learner and teacher support systems
- inability of teachers and learners to embrace the technology
- the educational philosophy of the institution

This booklet is not actually a handbook of 'how to deliver online courses'. Based on a survey of recent literature, it is an overview of some of the basic issues of online delivery—why get involved, some of the advantages and limitations, how to get started, and providing support for students and teachers. I hope it will answer some of the questions you may have about online delivery such as:

- How will using communications technology improve my institution's teaching and learning strategies?
- How will communications technology enhance student learning?
- What are the outcomes for students in an online environment?
- What impact will the World Wide Web have on my institution's educational strategies?
- Will using communications technology as an instructional medium replace conventional strategies?
- What is the role of the teacher in online delivery?
- How do I get started?
- What resources will I need?

What this booklet stresses is that 'the learner is central'. Online delivery is not used just because 'everyone else is using it', or because of apparent economic reasons, or because it will provide the institution with a 'high-tech' image. (Lambert & Williams 1999, p.1). Throughout the text useful resources are listed which will help you with the answers to these questions and to become informed about the key issues related to online delivery. Further reading is given at the end of the booklet.

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What is online delivery?

A **very simple** model of an online course includes the following features:

- existing print materials (lecture notes, handouts etc.) are converted to HTML and graphics
- placed on server, either as an Internet or Intranet site
- discussion groups are set up for interaction between students and lecturers and for assessment processes

This model can be used for either a whole course or parts of courses and as an adjunct to other media.

The words 'online' and 'virtual' are used widely and often indiscriminately to describe activities across all education sectors, which involve the use of information communications technology.

What is the difference between, for example, 'online delivery' and 'web-based delivery', 'online learning', 'online education and training', 'computer-mediated communication learning', 'technology-based courses' or 'electronic course delivery'? Some imply a narrower aspect than others but it would appear from the literature that these terms tend to be used interchangeably and perhaps the term itself is not important.

One of the most encompassing definitions for what we are discussing is that used by Tony Bates (1997, p.9) for what he calls **'a distributed learning environment'**:

'... a learner-centred approach to education, which integrates a number of technologies to enable opportunities for activities and interaction in both asynchronous and real-time modes. The model is based on blending a choice of appropriate technologies with aspects of campus-based delivery, open learning systems and distance education. The approach gives instructors the flexibility to customise learning environments to meet the needs of diverse student populations, while providing both high quality and cost-effective learning'.

What you need to remember is that online delivery is not 'technology in search of a solution'. It is about using communications technology to enhance the delivery of courses, to improve students' access to learning opportunities and their success. As Tony Bates suggests, online delivery should be part of an integrated approach to the way vocational education courses are, and will be, available to learners. (This issue is covered in more depth in the section 'design issues'.)

Other definitions include:

'**Online delivery** provides enterprises and individuals with access to just-in-time training from the workplace, home or community centre, as well as from TAFE campuses ... The online courses provide learning materials and guidance through the course of study from a lecturer or tutors who will communicate with students through email and online discussion groups and, if necessary, through other forms of communication such as videoconferencing and the telephone.' (TAFE SA online publicity brochure)

'**Online delivery** means accessing learning materials on the Internet, using computer simulations, and being supported by computer mediated communication.' (Moffatt 1997, p.325)

'**Online education** refers to any form of learning/teaching that takes place via a computer network. The network could be a local bulletin board system (BBS) or it could be the global Internet and World Wide Web. The network could also be a local area network (LAN) or an Intranet within a particular organization.' ('A guide to online education', Greg Kearsley 1997 http://gwis.circ.gwu.edu/~etl/online.html)

'**Online education** ... represents a unique domain of educational interaction. It shares attributes with both face-to-face and distance education, but the nature of the medium is distinct in its implications for education.' (Harasim et al. 1996, p.50)

'**Online learning** covers any use of computers and the Internet to facilitate learning. It includes, but is not limited to, the use of the Internet in the classroom, the use of the Internet to support distance learning courses, or the use of the Internet to support learning in specific topics. Online learning is typically treated as a subset of some other category (such as distance learning or educational technology).' (Stephen Downes http://www.atl.ualberta.ca/downes/future/home.html)

'**Online learning** systems are taken to mean educational structures that include a web-based technological infrastructure, online course materials and online enrolment, tutoring, communication, assessment and administration procedures. (They) often use complementary delivery methods, such as printed course notes.' (Mitchell 1999, p.1)

'"**Online learning**" is becoming a shorthand way of describing learning that is supported by the information storage, retrieval and communication capacities of networked computers. Most commonly today this involves using the Internet, usually via World Wide Web browsers such as Netscape or Microsoft's Internet Explorer.' (Toolbox Central 1999)

Electronic course delivery describes 'an integrated and holistic approach to course provision that depends entirely upon the use of teaching and learning resources that are made available in digital form'. (Barker 1999, p.4)

The **virtual campus** brings the learning environment into the home or workplace of the learner. Through the use of computers, a modem and telecommunication networks, students can 'attend lectures, take tests, receive feedback from professors, participate in discussions, and undertake team projects with fellow students, and more'. (Hiltz 1995, p.xvii)

'It is a **virtual classroom**, where learning materials, activities and assessment tools are made available to you so that you can work through them at your own pace.' (Online @ TAFE http://scorpius.tafe.tas.edu.au/about.html)

What types of educational organisations are using online delivery methods?

A recent Commonwealth of Learning report (Farrell 1999, p.4) identifies four categories of organisations using online technologies for course delivery:

- institutions involved in open and distance learning
- educational institutions traditionally using face-to-face or classroom-based delivery
- the corporate sector providing workplace training
- private individuals now entering the education and training market providing niche or highly targetted training

The use of online technologies is blurring the boundaries between these organisations as more and more courses are aggressively marketed—not just Australia-wide but throughout the world.

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Online delivery in VET in Australia

Most TAFE systems and many private providers are offering courses online and there is significant reporting of developments and outcomes in the literature and at conferences such as Networking99 and the earlier Networking97. The bibliography includes a selection of this literature and a comprehensive list of online courses is maintained by the trdev–aus email list (http://cleo.murdoch.edu.au/gen/trdev–aus/trdev_courses.html) and also on the CBTS (Australia) site (http://www.cbts.com.au).

We need to remember that in using the term 'online delivery', we are not necessarily talking about courses which are entirely delivered online and off campus. In fact many VET providers are using online delivery as an adjunct to other forms of delivery. For example:

- combined with face-to-face delivery
- combined with distance delivery
- on campus in computer suites
- using only some components of online delivery (e.g. email and conferencing)

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Why use online delivery?

The principal reason for using online delivery of courses is to ensure quality learning outcomes for students. Of course this should be the goal for all delivery methodologies, but what are some of the features of online delivery that may encourage students to become more independent and effective learners?

The advantages and disadvantages of online delivery are outlined in the next section but some of the features of flexible delivery, which may be enhanced by using online technology, include:

- delivering course content directly to students
- enhancing flexible delivery philosophies (adult learning principles, more learner centred)
- more easily providing access to the course and materials at any time, anywhere
- allowing students to progress at their own pace
- supporting dispersed communities of learners and building networks of learners
- providing the opportunity for interaction amongst learners and teachers
- facilitating the sharing of knowledge and understanding among members of a group who are not working together at the same time or place
- encouraging reflective interaction
- can be a more 'fun' way to learn and hence improve both the speed and quality of learning
- supplementing other technology by increased interactivity
- not entirely dependent on learners having access to the same software
- increasing access to an extensive range of teaching and learning resources through the Internet
- providing learning experiences that often are not able to be provided in classroom situations—using interactive techniques
- providing an even more flexible way to provide a variety of presentation methods
- creating a learning environment bringing learners, teachers and other experts together using email/chat/bulletin boards

Flexible delivery

What we need to remember is that the use of information communications technology is just another form or option of delivery of VET courses on campus and off campus. These electronically delivered courses may be formal courses or just 'a set of materials to satisfy the need for a small number of competencies to be addressed, drawn from different subjects' (Forsyth 1996, p.9).

Comment

"Over the last ten years, national bodies have encouraged TAFE institutes to become more flexible in how they deliver their programs. Students expect CIT [Canberra Institute of Technology] to be more flexible and responsive. Flexible learning means different things to students, staff and employers. At CIT, we identify flexible learning programs as those that allow students to start at any time and/or finish at any time and/or can be completed off campus. Online learning is one form of flexible learning.

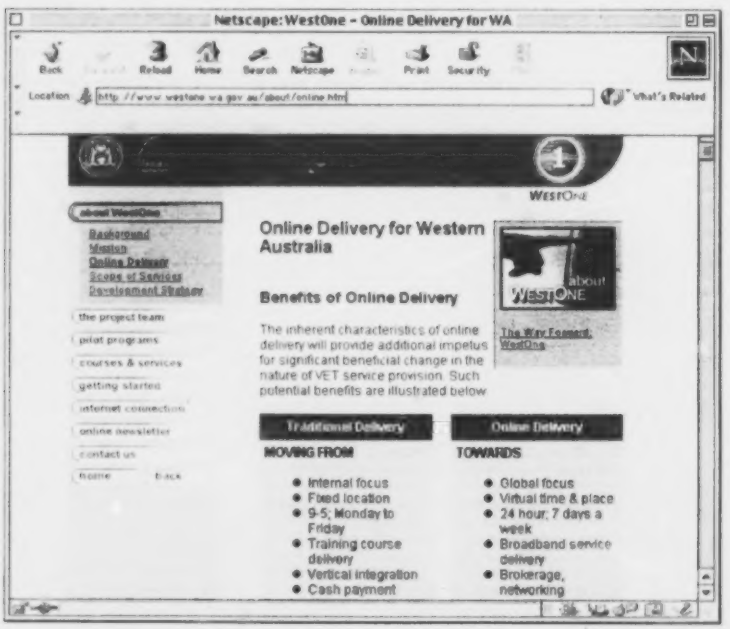
This definition includes programs offered through our flexible learning centres where programs can be started and finished at any time. It also includes programs that start at the beginning of a semester but allow students to finish as soon as they have the required skills. It also includes programs delivered in the workplace or online, whereby students can complete the program without attending a CIT campus."

(Peter Le Cornu, Dean, Faculty of Management and Business, Canberra Institute of Technology 1999)

The goal of flexible delivery/learning is to improve access to, and the effectiveness of, vocational education. The use of online technology should support this goal.

Case study (http://www.westone.wa.gov.au/about/online.htm)

Online delivery for Western Australia



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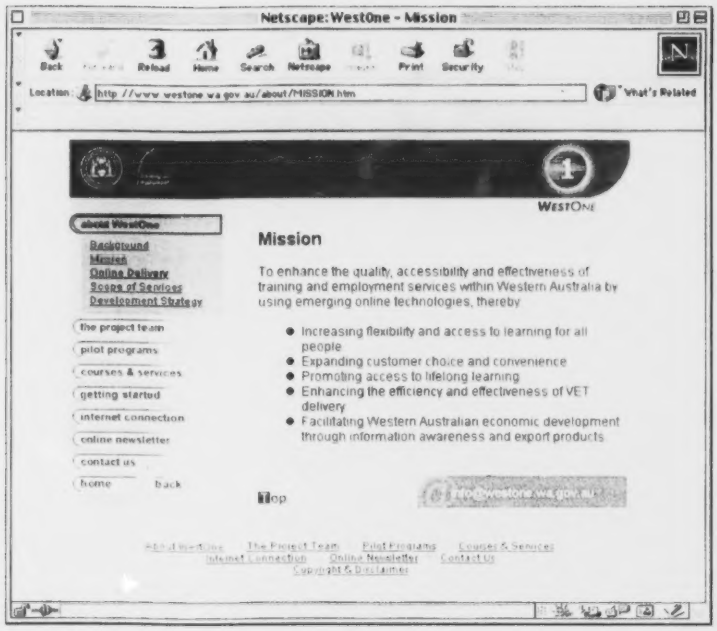

Benefits of online delivery

The inherent characteristics of online delivery will provide additional impetus for significant beneficial change in the nature of VET service provision. Such potential benefits are illustrated below.

Moving from

- internal focus
- fixed location
- 9–5; Monday to Friday
- training course delivery
- vertical integration
- cash payment
- academic cycle
- course orientation
- textual face to face
- fixed entry regime
- time-based funding and achievement
- employment opportunity cost
- academic cycle driven
- scheduled and uniform products and services

Towards

- global focus
- virtual time and place
- 24 hour; 7 days a week
- broadband service delivery
- brokerage, networking
- electronic commerce
- training on demand
- tailored modular delivery
- mediated, interactive and media enriched
- flexible entry/exit
- outcome-based funding and achievement
- workplace learning
- real-time service driven
- immediate and tailorable products and services

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Advantages and problems

Much has been written about the advantages and disadvantages of online delivery. The bibliography in section 2 includes many useful references that outline these characteristics in more detail. Some of the highlights are included in the chart below.

Advantages	Disadvantages or problem areas
Environment	
▲ potential to increase access to VET courses ▲ both structured and unstructured learning materials ▲ text and/or multimedia ▲ simple to access ▲ cross platform ▲ access to library and other resources (Mason 1997, p.4) ▲ course notes readily available (Wheeler 1996, p.5) ▲ capacity to customise and update materials quickly and cost effectively (Mitchell 1999, p.2) ▲ learning independent of time and place and students do not need to be online at the same time ▲ no travel for students or teachers to attend/deliver classes	▲ less flexible than print ▲ more costly than print ▲ need for computer equipment ▲ telecommunications may be expensive and/or unreliable (Mason 1997, p.4) ▲ requirement for bandwidth to manage large files and graphics ▲ may be a fear by students (and teachers) and/or inability to use technology ▲ software and hardware problems and support issues ▲ length of time to develop materials
Independent learning	
▲ supports a collaborative learning environment ▲ discussion and peer support can form part of the program (Wheeler 1996, p.5) ▲ invisibility of status and gender ▲ 'students and teachers are actively involved in creating and carrying out learning activities, together' (Hiltz 1995, p.xvii) ▲ 'facilitation of collaborative or group learning in a peer support and exchange environment ▲ more active learning—responses are "forced" by the computer ▲ self-paced	▲ interpersonal communication may not be as effective as face-to-face classes ▲ group activities may be limited e.g. group problem-solving or decision-making ▲ 'tools for tracking ideas and themes and navigating within the information rich online space are limited' i.e. need to get out of a linear model (Harasim 1989, p.61) ▲ potential information overload a minus to effectiveness (Hiltz 1995, p.12–14) ▲ requires self-motivation and regular participation

continued overleaf

Advantages	Disadvantages or problem areas
Independent learning/continued	
▲ use of other resources ▲ notes are available—"automatic byproduct" ▲ improved access to multimedia' (Hiltz 1995, p.12-14) ▲ can lead to – active participation (measured by level and amount of participation) – interactive learning – student-centred learning – dynamic and extensive sharing of ideas and opinions ▲ facilitates – knowledge-building and information-sharing – higher order learning or deep learning – learner to learner exchange ▲ encourages an equitable pattern of communication ▲ user control over interaction (level and amount) ▲ encourages reflection ▲ increased class 'time' ▲ text based enhances interaction (Harasim 1989, p.53–60)	▲ absence of spontaneous and real time exchanges ▲ information and sensory overload (Harasim 1989, p.190)
Flexibility and accessibility	
▲ asynchronicity leads to flexibility for learner e.g. discussion can be a continuous activity ▲ students do not need to adhere to a rigid schedule of classes ▲ independent of time and place ▲ feedback and answers to questions are readily available ▲ flexible entry and exit (Wheeler 1996, p.5) ▲ supports flexibility in assessment processes	▲ limited offerings at the moment ▲ equipment requirements ▲ need to be literate—textually and technologically

Case study RMIT pilot

Strengths and limitations of training on the Internet

Strengths

"The major strengths of the Internet are in the communication and information management. It is in these areas where you will enjoy the benefit of an enhancement to your teaching and learning environment.

Computer mediated communication allows a new type of interactive communication. Computer conferencing allows well-considered and effective online tutorials. These need careful structuring to encourage thoughtful participation.

The Internet provides learners with access to more and current information and allows them to collaborate with others locally, nationally and internationally.

It is an environment where the teacher–learner hierarchy is broken down and, as a consequence, the role of the teacher really does change to being that of facilitator and mentor.

It also provides flexibility even within the traditional classroom situation. For example, the students at RMIT found they did not have to attend classes every week to keep up to date with the work. They could log in to find out and complete the work they had missed."

Limitations

"The students in our on-campus pilot continued to value direct contact with teacher and peers. Even in off-campus programs some face-to-face sessions should be arranged where possible especially at induction. If online education is to become the norm as a delivery mode, institutions will need to give more attention to facilities for staff and students.

The development costs of programs can be significant. As with other flexibly delivered materials, there is usually a high front-end cost in research and development but as you teach more and more students, the unit cost is reduced.

For teachers, there is a danger of being overwhelmed by the need to be a software troubleshooter, hardware expert, network manager or CD maker in addition to working as a teacher."

(Wheeler 1996, p.30)

How do I **get started?**

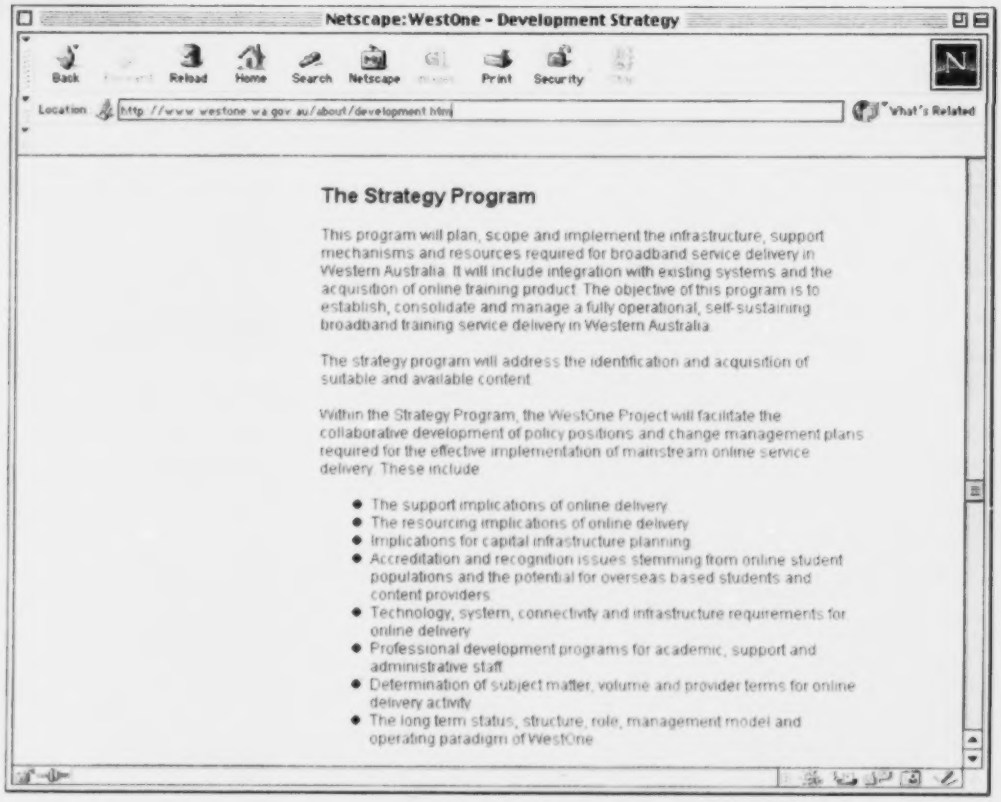
So you have decided that using online delivery is an option for your work group or institution. What happens now? This section outlines the steps that you might follow. You may also wish to start dipping into the section about instructional and interface design issues, as the teaching and learning (or pedagogical) issues will affect the steps that you take. These may include decisions that you make throughout the planning stage, choosing an appropriate course with which to start, deciding on what equipment you may need to purchase and selecting the technology and interfaces.

Planning

The RMIT case study (Wheeler 1996, pp.20–21) outlines some useful steps in planning for online delivery.

- Establish a team of committed people who want to work on the project.
- Find out what is available in your institution (including hardware and software).
- Get some training on using Internet, basic and advanced web publishing.
- Undertake some 'environmental scanning'. In other words find out who is already using online technology and establish some evaluation principles.
- Generate ideas on the suitability of using the Internet as a medium for teaching (using the *From chalkface to interface* principles and checklists will be a good starting point).
- Develop a clear idea of the overall project goal and write down what you want to achieve.
- Draw up a project plan including outcomes, target audience, scope of the project, project team members, timeline and proposed budget, providing an early focus on users and tasks.
- Work on your budget for the program including technology, procedures and people.
- Investigate funding sources and get the support of the decision-makers in your institution.
- Work on course design/storyboard.
- Establish and document maintenance and support structures for all stages.
- Develop a publishing process.
- Publish web documents.
- Carry out rigorous testing by technical staff.
- Provide professional development for teaching staff.
- Pilot the course on a likely group of 'end users'.
- End users should complete an evaluation of the pilot and post-development checklist testing surface design, effectiveness of instruction and technical aspects.
- Organise full implementation with the target audience.

Resource


Netscape:WestOne - Development Strategy
Back
Reload
Home
Search
Netscape
Print
Security
Location
http://www.westone.wa.gov.au/about/development.htm
What's Related
The Strategy Program
This program will plan, scope and implement the infrastructure, support mechanisms and resources required for broadband service delivery in Western Australia. It will include integration with existing systems and the acquisition of online training product. The objective of this program is to establish, consolidate and manage a fully operational, self-sustaining broadband training service delivery in Western Australia.
The strategy program will address the identification and acquisition of suitable and available content.
Within the Strategy Program, the WestOne Project will facilitate the collaborative development of policy positions and change management plans required for the effective implementation of mainstream online service delivery. These include:
The support implications of online delivery
The resourcing implications of online delivery
Implications for capital infrastructure planning
Accreditation and recognition issues stemming from online student populations and the potential for overseas based students and content providers
Technology, system, connectivity and infrastructure requirements for online delivery
Professional development programs for academic, support and administrative staff
Determination of subject matter, volume and provider terms for online delivery activity
The long term status, structure, role, management model and operating paradigm of WestOne

WestOne development strategy http://www.westone.wa.gov.au/about/development.htm
An example of a well-developed strategy

Institutional support is a critical component of introducing online delivery. This support will be required in two areas:

- support and commitment to new educational directions which incorporate online delivery
- support for staff who wish to be involved in online development in terms of time, training and resources at both institutional and departmental levels

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Resources

From chalkface to interface (OTFE 1996): The 'six principles of good practice in the use of technologies' and checklists at the end of each section are invaluable for planning and implementing online technologies.

Principles include:

- stakeholder interests and learner focus
- organisational requirements and constraints
- evaluative framework
- organisation and resources
- teaching and learning
- technology and learning materials

Sue Goldman 1997, 'Change management for online delivery: Strategies for organisations moving to online delivery'. Paper delivered at Networking97 http://www.tafe.sa.edu.au/lsrsc/one/natproj/cm/cmint

TAFE SA change management plan http://www.tafe.sa.edu.au/lsrsc/cm

John Mitchell 1999, 'Business models for developing online learning systems: findings from current research' outlines the components of effective business models for organisations considering online delivery. (http://online.nw99.net.au/content/library)

Choosing an appropriate course

A decision will need to be made about how much of the course will be delivered online. Questions will need to be asked and responses documented about the learning objectives of the course and what types of instructional strategies and assessments will be used to achieve these objectives. The key questions will include 'how much interactivity do I require of students' and 'can the learning outcomes be achieved through online delivery?'. It may be that the course will require the use of other media and a mix of delivery methods rather than being offered totally online.

Developing online materials

Resources used in an online course will include the course content, learning materials (documents, multimedia resources, web pages etc.), learner and teaching guides and can be on the server, on CDRom, on the Internet or Intranet. A key factor in the development of these materials will be ensuring that you have staff who are able and have access to the time and resources to develop and maintain the relevant materials and teachers who are trained in the delivery of online courses. (The 'design issues' section will guide you through many of the pedagogical and instructional design issues.)

What equipment is required?

The campus will need to set up a network. How much equipment lecturers and students need will depend on the type of course offered and whether it is studied on campus or off campus or a mixture of both. Ideally, lecturers will require a computer, modem, CDRom drive, printer, software, Internet Service Provider and perhaps a second phone line at home as well as the office. Students will require the same equipment as well as access to a bank of computer terminals on campus. Hiltz (1995, p.89) suggests that a safe guideline for the adequate number of work stations on campus is half as many terminals as number of students in the largest online class.

Server hardware

The software will be accessed from personal computers which connect by telephone to a mini or mainframe computer generally referred to as the 'server'. This server can be on campus, or if the institution decides, with a commercial web server provider. Simply, the server holds all the learning materials such as study guides and learning resources. Teachers and students access the server through the Internet from work stations on their desks or in computer centres. On campus this will be through the campus Intranet. Off-campus access will usually be through an ISP (Internet Service Provider) using a PC and modem.

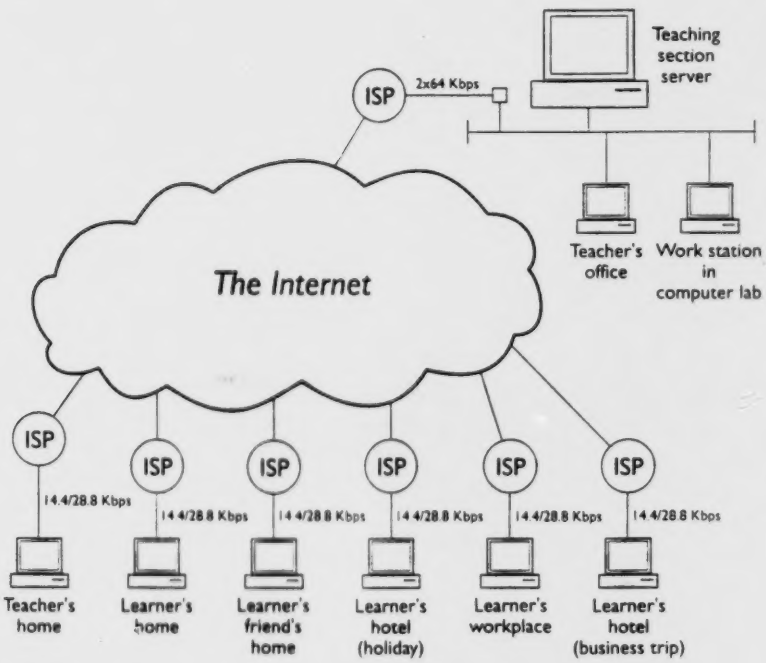

Diagram of online learning environment (Webb 1997)

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Selecting the technology

Key resources

ANTA: 'Preferred standards to support national cooperation in applying technology to VET' (http://www.vicnet.net.au/~neptune/) is an essential resource. These standards provide guidelines for the acquisition and use of technology for PCs, email, Internet and Intranets, videoconferencing and data. The standards aim to maximise opportunities for flexibility and collaboration across the VET sector by allowing everyone's technology to 'talk' to each other. Each section includes a value assessment of the technology for the organisation, teachers and learners. Of particular interest for organisations planning online delivery are the following workshop papers:

- Computer managed learning (including checklists to identify desired functionality)
- Data
- Email (including assessment of possible options, details of functional specifications and operating guidelines)
- Groupware
- Internet and Intranet protocols (including an overview of options for design of online sites, details of functional specifications and operating guidelines)
- Personal computers
- Videoconferencing

Choosing & Using Technologies in Education & Training (http://avoca.vicnet.net.au/~cute/) builds on the earlier *From chalkface to interface* report (OTFE 1996)

Technical support

Technical support will be required for teachers and students. Both online and printed documentation of systems should be provided, including a comprehensive induction and training process. Decisions will also need to be made about a 'help desk' for troubleshooting and whether this is 23 hour access for both students and teachers. To ensure that the online services are working correctly and consistently, it will be necessary to develop a close partnership with the computer technicians responsible for maintaining the institution's systems.

Delivery system or software

Delivery system or software is the online course management software that will be used to design and/or support all or most of the communication and learning activities. The main categories of software include:

- media creation software to create text, graphics, audio, video and animation (e.g. PaintShop, CorelDraw)
- web publishing tools to create and manage web pages (e.g. HTML Ed Pro, Pagemill, MS FrontPage)
- Internet-based conferencing tools for synchronous and asynchronous communication (e.g. WebBoard, Web Forum)
- Internet-enabled multimedia authoring software (e.g. Authorware, ToolBook)
- integrated distributed learning environment (or package) which integrates the course development, collaboration and management tools into an online environment (e.g. WebCT, TopClass, The Learning Manager)

What are the features or functionality that you need?

Regardless of whether you develop the online system yourself using software similar to that listed in the previous section, or you decide to purchase an existing integrated package, decisions need to be made about the functions you will require to deliver the course. The complexities and special requirements of the courses will dictate these. Key areas will include user needs, functions required, system standards, security and maintenance.

A checklist to assist your planning ☑

- ❑ include graphics
- ❑ include hyperlinks
- ❑ security processes (generally password protected login)
- ❑ directory
- ❑ access to a message system—email, chat, bulletin boards (all or some)
- ❑ synchronous and asynchronous communication
- ❑ personal mailbox for receiving and organising email
- ❑ access to editors, word processing, and spreadsheet software
- ❑ online training/help
- ❑ computer conferencing
- ❑ personal notebooks
- ❑ ability to FTP (file transfer protocol)
- ❑ activities (quiz, role-play, questions and answers)
- ❑ instructional management tools
- ❑ search facilities for locating materials
- ❑ access/links to other resources/library/counsellors/bookstore
- ❑ help sessions
- ❑ common meeting area/student lounge (forum or bulletin board)
- ❑ access to national and international networks
- ❑ assessment tasks including self-assessment tests and final tests (consider also how these will be generated and selected)
- ❑ assessment bank
- ❑ student tracking/assessment system

What else do *you* need?

The decision to buy an existing integrated system will depend on the functionality you require and the resources available to you for development of online courses. Factors to consider when considering purchasing a system will include:

- ▲ Who designed it? Educators or technologists?
- ▲ Does its pedagogical design match your course objectives?
- ▲ How widespread is its use?
- ▲ Can you trial a version with students and teachers?
- ▲ Is it easy to use?

- What is the cost—licence fees, maintenance etc.?
- What support is available from the supplier and is it available 24 hours?
- What staff training will be required for the development program, what is the cost and who will provide this?
- To what extent do its functions match your requirements? You may accept that not all your initial requirements may be met, balanced against cost or other features.
- What future developments is the company planning?
- What are the hardware requirements—can your existing server run the software or will you need to upgrade or purchase a new server?
- Can your computer technicians support the system?

The decision to develop an inhouse system will also depend on the functionality you require and the resources available to you for development of online courses and the overall management system. Factors to consider when planning to purchase a system will include:

- Do you have the resources (time, money and staff) to develop the management system?
- What staff training will be required for the development program, what is the cost and who will provide this?
- What are the hardware requirements—can your existing server run the software or will you need to upgrade or purchase a new server?

An important issue to take into account is the ability of whatever system is chosen 'to grow to support the network as it becomes larger and can support the needs of experienced users, not just novices' (Harasim et al. 1996, p.171).

Examples of integrated systems

The main integrated systems used in the VET sector in Australia are WebCT, FirstClass, TechWorks and The Learning Manager. This is a growing area and there are many other products. The following resource may help you to decide which product *may* be best for your needs.

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Resource

A comparison of various integrated systems can be found at http://multimedia.marshall.edu/cit/webct/compare/comparison.html

Aspects of the software which are compared include:

- developmental features
- instructor tools
- instructional features
- student tools
- technical support
- administrator tools
- administrative features
- software costs
- hardware requirements

At the same web site five products are benchmarked in the following areas:

- overall tool features—e.g. online help, ability to change features, ease of navigation, setting up
- capability to create a course—e.g. ability to add information, include links and attachments, import from other software
- support for email, chat and conferencing features
- administration features
- support for assessment processes

Costs

Costs need to be considered in terms of money, time and resources. An example of identification of the costs involved is the following case study. (Source: Webb 1999, 'Economics of online delivery')

IT cost model

Establishment costs

- Equipment purchase price and installation
- Accommodation
- Staff training (current staff)
- Learning material development

Annual investment costs

- Revision of learning materials
- Development of new learning materials
- Enhancements to equipment
- Equipment replacement cost

Recurrent costs

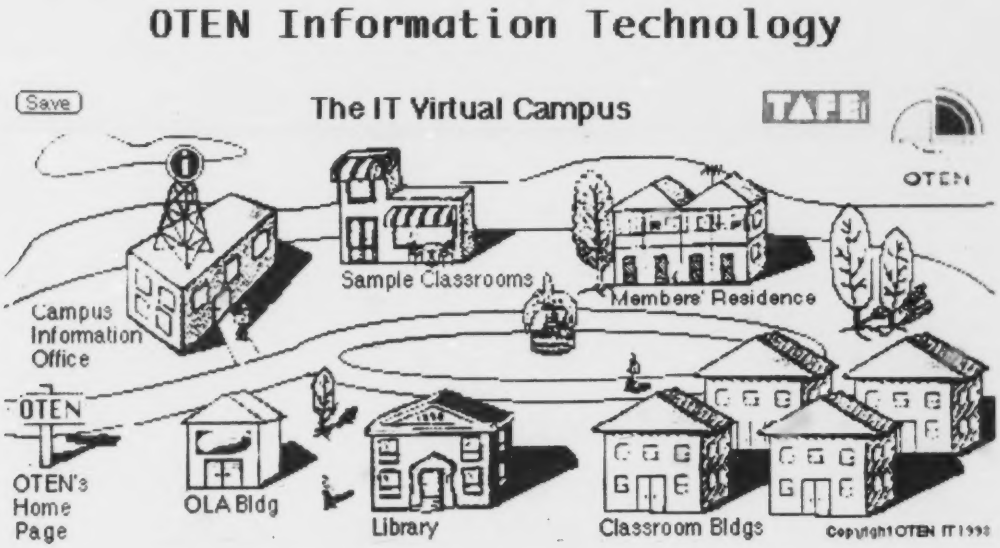
- Orientation
- Learning material to media
- Delivery cost
- Learner support
- Workshops
- Assessment marking
- Subject management
- Course management
- Equipment management
- Staff training (new teachers)
- Equipment support and maintenance
- Service support and maintenance
- Equipment operation
- Teacher technical support
- Communications costs
- Insurance
- Security
- Postage
- Telephone

How does it work for the student?

Simply, the student will:

- log into a main menu
- select from a range of options, e.g. browse for files, exchange messages etc.
- log into the 'classroom' which contains the course content (module map and information, units, assignments)
- work online or offline (e.g. download files or access a CDRom which might also contain other materials)
- print materials if required
- perform assessment tasks
- forward assessments and messages to lecturer
- receive feedback etc. from lecturer
- reflection

The following example is the OTEN IT virtual campus.
(Source: Greg Webb, OTEN)



Home page of the OTEN InfoTech virtual campus

The metaphor used for web site is a 'virtual campus' (VC). The campus comprises a number of buildings which contain different categories of information. For example, course information is available in the campus information office and student contact details in the members' residence. Learning materials are in the classrooms buildings area of the campus. This area comprises a number of buildings, one for each course (see next page).

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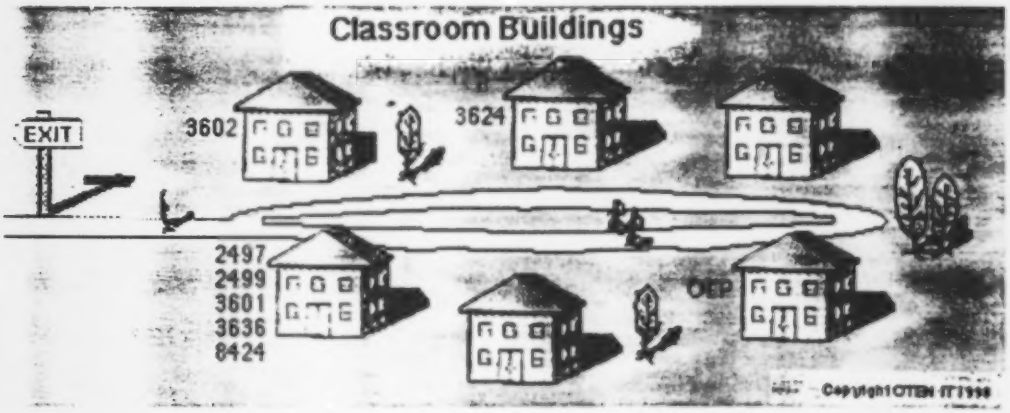
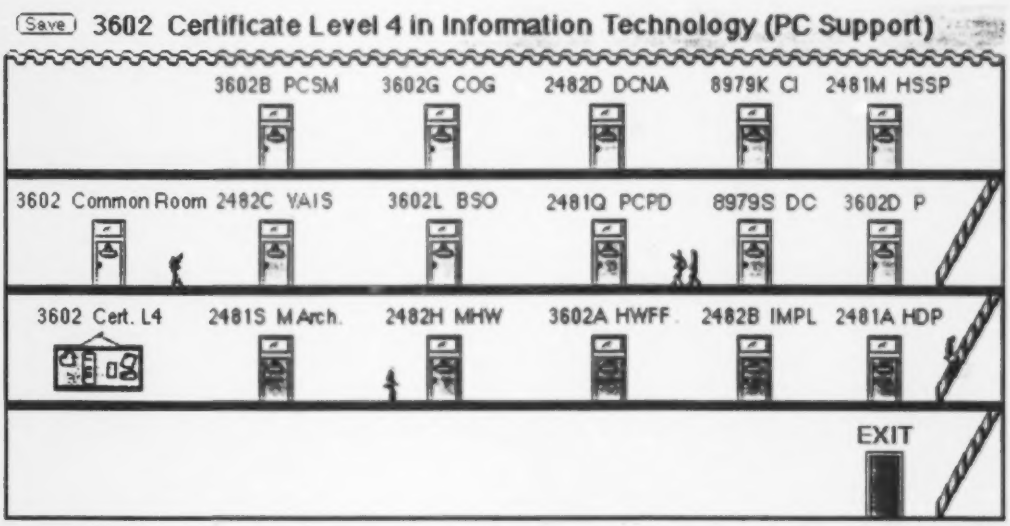
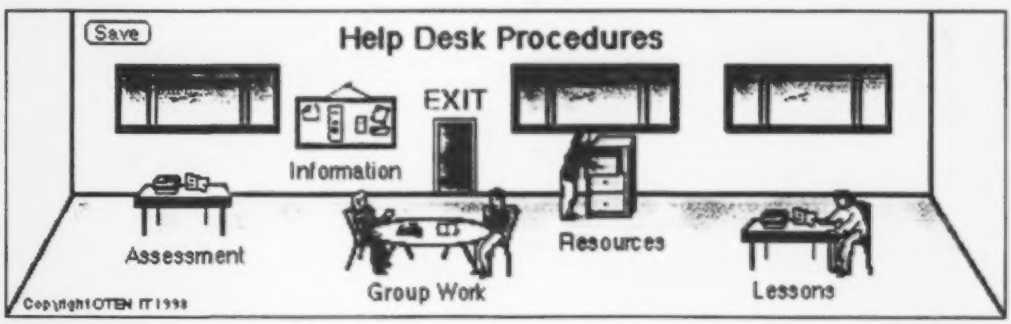


Within a classroom building, there are doors labelled with module names.



This is the inside view of a classroom building; each door leads to a classroom where a module is taught.



The classroom contains learning materials for a specific module.

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What is happening now?

The following chart provides a snapshot of developments.

State	Site	Software
TAFE		
SA	TAFE SA Online http://www.tafe.sa.edu.au/top	WebCT
NSW	OTEN InfoTech Virtual Campus http://www.tafensw.edu.au/neit	HTML pages and LiveWire scripts
	New England Institute of TAFE http://www.tafensw.edu.au/neit	Web Training Toolbox – locally customised system
Victoria	Virtual Campus http://www.tafevc.com	varies
	20 VET providers using the VC as a platform	examples: South West TAFE – Frontpage http://www.swtafe.vic.edu.au
		NMIT – FirstClass http://online.nmit.vic.edu.au/
		Box Hill TAFE – WebCT http://www.bhtafe.edu.au
		Wodonga – FirstClass, Webb Net http://www.wodonga.tafe. edu.au/online/main.htm
		Swinburne – The Learning Manager http://online.oeit.vic.edu.au
Tasmania	Online @ TAFE established Sept 1999 http://scorpius.tafe.tas.edu.au	evaluating WebCT and TopClass

WA	WestOne http://www.westone.wa.gov.au	generally WebCT
	12 VET providers using WestOne as a platform	Karratha College Online http://college.karratha.wa.edu.au The Learning Manager
Queensland	TAFE Qld Online http://www.tafe.net	VETTWEB – locally customised system; includes online enrolment and support
ACT	CIT Online http://online.cit.act.edu.au	TopClass
Example of other providers		
Qantas	Qantas College Online http://www.qfcollege.edu.au/default.html (staff access only)	TechWorks
AMES, Victoria	The Virtual ILC http://home.vicnet.net.au/~ames/CLiC/vilc/menu.htm	combined face-to-face and online delivery
Training Precinct	http://www.ttp.com.au	WebCT

Universities are using either WebCT or TopClass (Atkinson et al. 1999, p.1)

What are the **design issues?**

It will be obvious from the previous section that attention to the design of the online learning content and environment is a critical component of getting involved in online delivery. This can be broken down to the two main interrelated components:

- instructional design
- interface design

Both the design of the content and the structure of the interface 'should be designed to suit the learning styles and access needs of learners, the ability of teachers and other staff to provide support for learners, and the curriculum content of the program' (*From chalkface to interface*, Principle 5). Each is equally important to ensure that learners will be able to take part in quality active and purposeful learning experiences.

Resources

Jasinski: *Educational design models for online learning*

Site includes web sites which 'provide examples of different educational design models for online learning environments. Great resources for planning the best approach to suit your context, learning task and target group'.

http://www.learnscope.anta.gov.au/display_stories/1-90.../display_stories_1510.htm

Houlden and Houlden: *Best practice in online delivery*
Report outlining current best practices in the online delivery of training. Chapter headings include:

An introduction to online delivery

- The benefits and drawbacks of online delivery
- Good practice in delivery
- Good practice within TAFE NSW
- Research already available

Instructional design for online delivery

- Basics of course design for online delivery
- Options for content development
- Ensuring accessibility to web resources
  - Graphics
  - Links
  - Image maps
  - Tables
  - Frames
  - Forms
  - Background colours
  - Audio clips
  - Non-standard formats

Resources

Choosing your online tools

- Tools analysis and comparison
- Comparison table for all applications
- Matching the tool to the learning style

Equipping for online course delivery

- Analysing learner readiness
- Ensuring trainer readiness
- Checking system requirements
- TAFE NSW teacher readiness survey
- Tools and resources for getting equipped
- References

http://www.jansol.com.au/products/research/default.asp

Instructional design

The various stages of the instructional design process will include:

1 Developing the educational model will involve identifying goals and learning objectives that will be the foundation for development of content, assessment tasks, instructional and interface design. For example you need to answer the questions:

- What do you want the students to do and how will the technology allow them to do it?
- What instructional media and tools do you have access to which will support the goals and objectives of the course, are accessible to learners, relevant to the course, and you can support?
- How will you provide access to the learning guide, course information and study pathways?

2 Deciding which components of the course will be online.

3 Deciding on the types and mix of instructional strategies, activities and assignments to achieve the learning outcomes and if these will be effective in an online environment. For example, you need to answer questions such as:

- How will you achieve activity-based learning and a high level of interactivity between participants?
- How will you provide access to resources, exam information and advice?
- What sorts of interactions between learners, and learners and teachers, do you want to achieve taking into account factors such as:
  - the nature of the task
  - subject matter

- the nature of the group
- individual characteristics and different learning styles?

For example will you design a virtual coffee shop/student lounge for unmoderated discussion?

The mix of instructional strategies that will be used may include:

- 'lecture' formats such as notes online
- discussion—mailing lists/bulletin boards etc.
- forum—open discussions, chat sessions etc.
- small group work—synchronous chat, asynchronous email etc.
- projects
- case studies

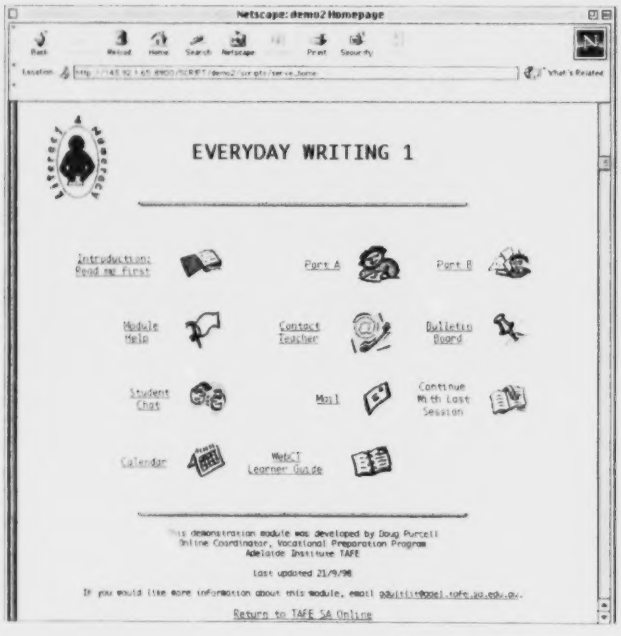
4 What sort of assessment tools will you use for self, formative and summative assessment:

- How will you provide feedback, monitor progress and adjust learning strategies?

5 What learner and teacher support systems and services do you need to provide? They should be comprehensive, responsive, learner oriented, and always available; for example, online technical help with telephone and email access.

Just as for face-to-face instruction, you need to consider factors such as:

- sequencing of content and activities
- how many tasks/activities should there be to achieve effective learning
- how you will make course expectations clear
- providing opportunities for discussion (synchronous and asynchronous), information seeking
- activities which will contribute to staff and student motivation e.g. welcome messages/ positive feedback etc.



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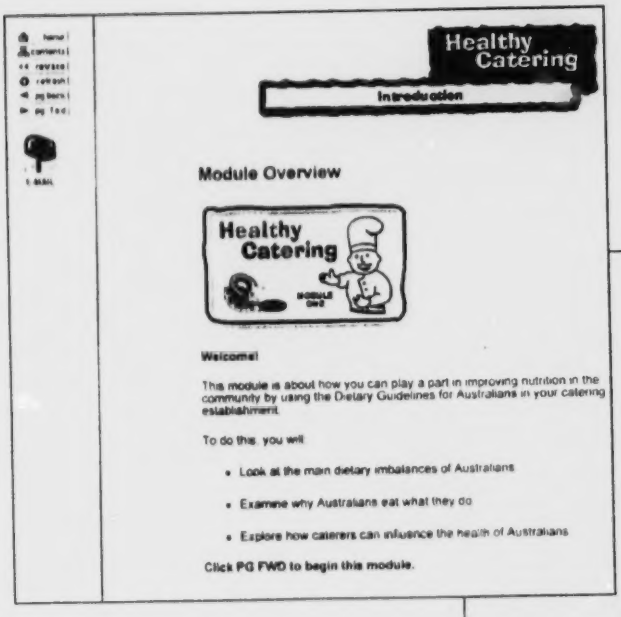
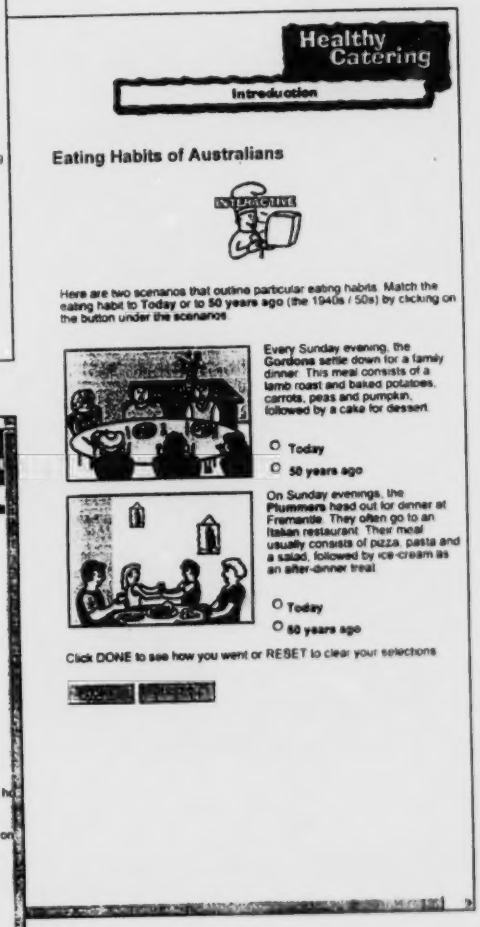
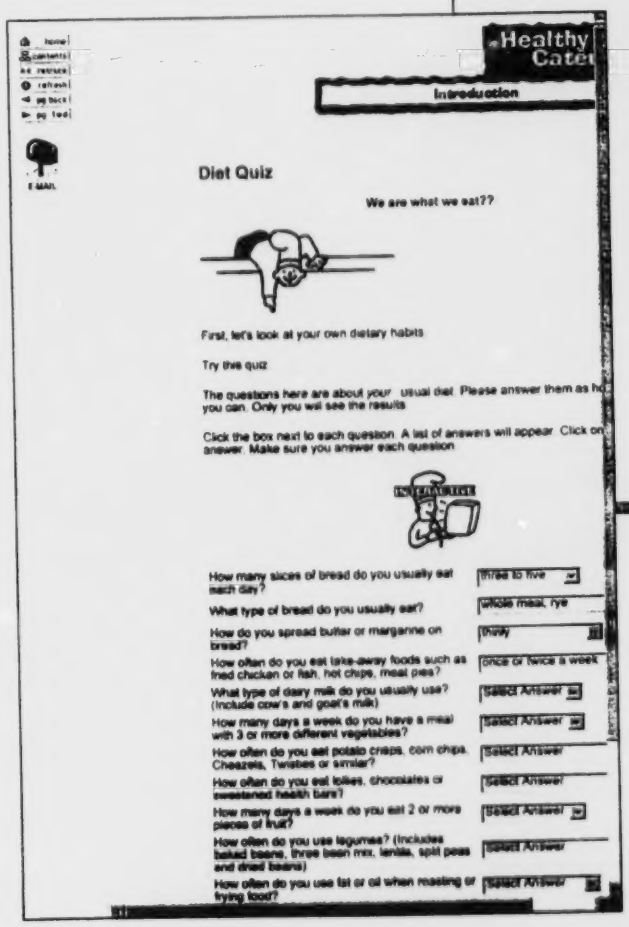

Healthy Catering
Introduction
Module Overview
Healthy Catering
Welcome!
This module is about how you can play a part in improving nutrition in the community by using the Dietary Guidelines for Australians in your catering establishment.
To do this, you will
• Look at the main dietary imbalances of Australians
• Examine why Australians eat what they do
• Explore how caterers can influence the health of Australians
Click PG FWD to begin this module.


Healthy Catering
Introduction
Eating Habits of Australians
INTERACTIVE
Here are two scenarios that outline particular eating habits. Match the eating habit to Today or to 50 years ago (the 1940s / 50s) by clicking on the button under the scenarios.
Every Sunday evening, the Gordons settle down for a family dinner. This meal consists of a lamb roast and baked potatoes, carrots, peas and pumpkin, followed by a cake for dessert.
Today
50 years ago
On Sunday evenings, the Plummers head out for dinner at Fremantle. They often go to an Italian restaurant. Their meal usually consists of pizza, pasta and a salad, followed by ice-cream as an after-dinner treat.
Today
50 years ago
Click DONE to see how you went or RESET to clear your selections

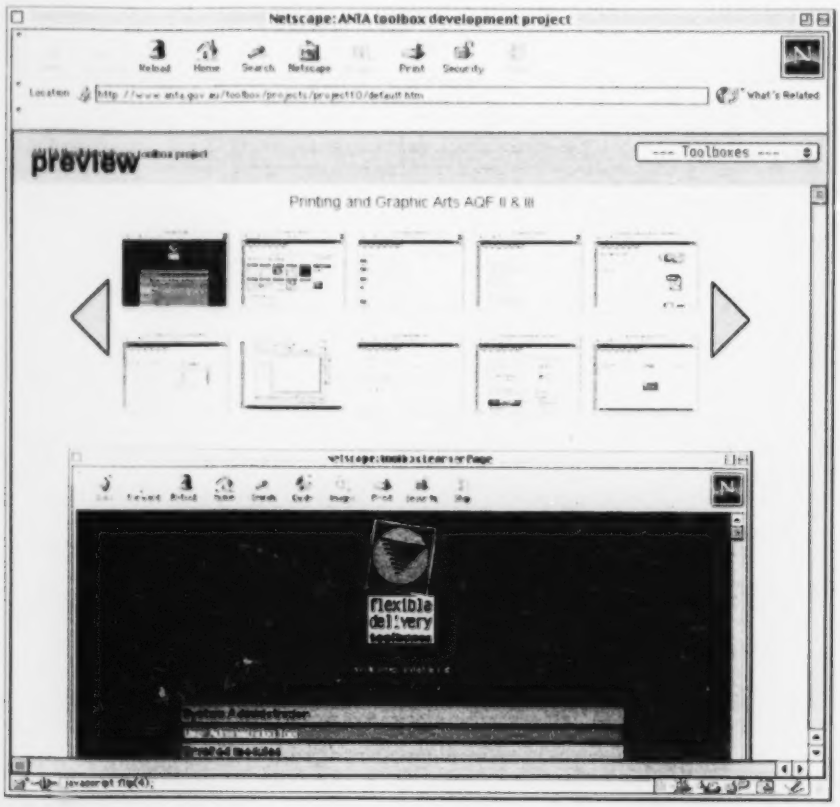

Introduction
Diet Quiz
We are what we eat??
First, let's look at your own dietary habits.
Try the quiz.
The questions here are about your usual diet. Please answer them as h
you can. Only you will see the results.
Click the box next to each question. A list of answers will appear. Click on
answer. Make sure you answer each question.
INTERACTIVE
How many slices of bread do you usually eat each day?
three to five
What type of bread do you usually eat?
whole meal, rye
How do you spread butter or margarine on bread?
thinly
How often do you eat take-away foods such as fried chicken or fish, hot chips, meat pies?
once or twice a week
What type of dairy milk do you usually use? (Include cow's and goat's milk)
Select Answer
How many days a week do you have a meal with 3 or more different vegetables?
Select Answer
How often do you eat potato crisps, corn chips, Cheezels, Twisties or similar?
Select Answer
How often do you eat lollies, chocolates or sweetened health bars?
Select Answer
How many days a week do you eat 2 or more pieces of fruit?
Select Answer
How often do you use legumes? (Includes baked beans, three bean mix, lentils, split peas and dried beans)
Select Answer
How often do you use fat or oil when roasting or frying food?
Select Answer

Comment—the learner is central

"Don't let the razzle dazzle of new technologies blind you to your learners' real needs. Admit, by all means, that a certain medium may open up new teaching possibilities that you may want to exploit. But don't let the tail wag the dog. Keep in mind your teaching or training intentions and also your selection criteria. I list mine below. You may prefer others of your own.

- What kinds of learning do we want learners to do?
- Which medium (or combination of media) might best enable this?
- Can we make these media available to learners at a time and place that would suit them?
- How might learners feel about using these media?
- Do learners have the skills needed to use these media?
- Will support staff be able to work effectively with learners using these media?
- Shall we have sufficient control over the content and teaching approach of the media?
- What can we afford?"

(Rowntree 1992, p.118)



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Interface design

Resource

Forsyth 1996, *Teaching and learning materials and the Internet*

Chapter 4—'Getting started: The Internet and instructional design'—is an excellent, easy-to-follow resource for both instructional and interface design.

Some principles for interface design include:

- trouble-free and easy access
- easy to navigate (e.g. use of icons, content maps/diagrams, relatively uncluttered screen layouts), consistent use of features but also creating diversity
- provide a sense of human interaction
- helpful and responsive so that learners feel confident
- keep in mind your learner's environment. It is probably best to design to the lowest hardware and software configuration, particularly if learners are off campus. They will need to have good enough equipment and access to enough bandwidth to run your programs

WWW application	Information access	Interactive learning	Networked learning	WWW development
Learning activities	browsing, linking, reading, exploring	controlling, testing, responding, querying, planning, reflecting	communicating, collaborating, articulating, negotiating	planning, building, constructing

LOW Learner engagement and control HIGH

Continuum of activities and applications for active learning (Oliver & Omari 1997)

Summary

The keys to success in designing online delivery courses will include:

- well-thought-out instructional, graphic and interface design which is pedagogically sound, interactive and will engage learners
- not just dumping text and graphics onto web pages

- quality content and activities which encourage self-directed and self-paced learning
- strategies which include task-oriented learning activities which encourage deep learning, i.e. to apply knowledge and skills
- development of effective partnerships between content experts and instructional and interface designers
- using good practice in student support (educational and technical support)
- effective training for both students and lecturers
- providing links to resources
- using technology to facilitate lifelong learning

Comment—just like a garden...

"An online course is like a garden in many ways, and one of the most fundamental similarities is the importance of design. The design of a garden refers to the shape of the beds and structures for the plants to grow in and on, and to the combinations of plant material, to produce both harmony and contrast. The design of an online course refers to the different types of structures created to hold and shape the interaction among participants, as well as the sequencing of these different forms of interaction. And just as a garden of all pink roses or all white baby's breath or all blue delphiniums would be boring, so is a single type of structure for class interaction unexciting; it is more effective to create a carefully planned mix of different forms or structures for interaction. On the other hand, to try to include a little bit of everything creates a lack of focus and cohesion."

(Harasim et al. 1996, p.144)

Copyright and intellectual property

Some of the other issues that need to be considered in designing online delivery programs are:

- copyright—all copyrighted material must have clearance. It is wise to protect your organisation and to obtain permission to link other sites to yours
- protect your own intellectual property
- protect your income from student fees by using accounts and passwords for fee-based courses
- share online materials through licences and purchase rights

It is important that adequate support is provided for students and teachers involved in online media, in order to minimise problems such as disappointment in the technology or failure to complete courses.

Student support

Student support needs to be available at all stages of an online course. The categories of support will include responding to student's requests for information and advice, providing feedback on progress and also structural support through management of the online environment and resources.

As with enrolment processes for on-campus face-to-face delivery, the student should receive acknowledgement of his/her enrolment, instructions about the course, expectations regarding assignments etc.

In addition, information should be provided about:

- hardware and software requirements
- how to get started and login and password information (including the web address of the course!)
- email address
- any policies, guidelines and rules
- how to get help

An induction or orientation program should be available as an online tutorial with information about:

- Learning how to learn in the online environment, answering questions such as:
  - What is online delivery?
  - What are the advantages of an online course e.g. flexibility?
  - When can I start and how do I enrol?
  - Can I study anytime or anywhere; can I combine online study with on-campus classes?
  - What modules/courses are available?
  - How is confidentiality handled?
  - How are assessments performed?
  - What are the costs?
  - What are the policies regarding 'attendance', assignment completions etc.?

- Learning how to use the technology and the software, changing passwords, answering questions such as:
  - What hardware and software do I need? (including the minimum specifications required, modem access, how to connect to an ISP etc.)
  - How do I communicate with my lecturer and other students?
  - How do I use the browser, email and chat facilities?
  - How do I make the best use of other resources through links, CDRoms, print materials?
  - If I don't have these skills, how will I get them?
  - Is help always available?
- Learning how to navigate through the learning space, e.g. an online guide to the software, icons, navigation tools, menus etc.

Support for teachers

Comment

"A traditional helpdesk conjures images of a desk, phone, computer, manuals on the shelf, and someone responding to problems over the phone. In the online environment it becomes possible to add a web site, email support and access through Internet browsers as well as the phone. An online helpdesk allows support resources to be accessed at any time, from an Internet connection. This enables staff to find solutions without calling the helpdesk."

(Steve Roberts, TAFE SA)

Strategies for teachers' support may include the following:

- training in using the technology and teaching in the online environment
- receiving support and feedback through mentor or buddy systems with more experienced online teachers available for advice to novices
- ensuring technical help is available when required
- providing links to other staff, developers and IT staff as part of a team of online facilitators
- managerial support for initiatives
- teacher chat rooms and/or discussion lists
- checklists of tasks, actions etc.
- newsletters such as the WestOne online journal

'Teaching in an online program is a many-sided business. At times you have to provide technical help. At other times you have to facilitate and provide guidance. The students sometimes have more technical expertise than the teacher and so you become the learner. There is a steep learning curve in delivering education in this way'. The roles for the teacher therefore include:

- facilitator
- program administrator
- net expert
- information manager
- team member

(Wheeler 1996, p.10)

And there are changed roles for other people involved in online delivery. There is an increased diversity of roles and change management needs. People who are teachers now become facilitators; managers are now change agents; and the trainer becomes an information broker and assessor.

Comment

"... a real expectation for the use of the Internet in course delivery is that, contrary to an expectation that the role of the teacher will diminish with Internet or computer-based course delivery, the demands on the teacher's time remain the same and may increase. However, the types of demand change. This is where the teacher must change in order to provide a service for learners. One of the initial changes is that the teacher becomes a monitor and mentor. The teacher's role becomes less instructional and more supportive. At the same time the Internet changes the role of the learner from one of recipient to participant."

(Forsyth 1996, p.33)

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What are the skills that teaching and course development staff will need?

The following table sets out recommended roles, tasks and skills within development and delivery teams in relation to flexible delivery and flexible learning (including online). (Source: ANTA 1998, *TAFE teachers online: Professional development for online delivery*)

Design	Delivery	Roles	Description/tasks
▲		Developer – online learning materials	Design, adaptation and implementation of effective teaching and learning philosophies and principles to the online learning environment. Tasks may include authoring of learning materials, development or identification of resources and activities, storyboarding, developing a range of learning strategies that meet the needs of individual learners …
▲		Web or HTML author – online learning materials	Implementation of online technologies and software applications (HTML coding, WebCT, Javascript etc.) to enhance online learning through quality page design, presentation of materials, effective navigation tools, storyboarded layout, implementation of interactive features, communication facilities such as email, forums, bulletin boards etc. Tasks may include HTML coding, page layout, presentation, graphics design, coding of interactive facilities …
▲		Instructional designer	Provide guidance to people involved in online learning materials design, development and online authoring, editing and production. To work with these people as a catalyst for creativity, diverse thinking, inspiration etc. in development process with a focus on learning/teaching.

Skills categories

Flexible Learning/Diverse Learning Styles
Adult Learning Principles/Philosophies
Models for Online Learning Materials Development
Subject Expertise
Finding Information on Internet
Fundamental Awareness and Competence within Internet Environment
Creativity and Imagination
Key Competencies
Course Design

Fundamental Awareness and Competence within Internet Environment
Creativity and Imagination
Key Competencies
Internet Applications
Web and Online Materials Design

Flexible Learning/Diverse Learning Styles
Adult Learning Principles/Philosophies
Models for Online Learning Materials Development
Finding Information on Internet
Fundamental Awareness and Competence within Internet Environment
Creativity and Imagination
Key Competencies
Web and Online Materials Design

Design	Delivery	Roles	Description/tasks
▲	▲	Technical support person	IT support for the online technologies being used by the project teams. Also assistance with online development applications packages.
▲		Subject specialist	Work closely with online materials developers to ensure subject coverage in accordance with national training packages or curriculum descriptors. This may well be a specialist from industry to ensure current industry principles and practices are applied.
▲		Project manager	Project management tasks with a special emphasis on co-ordination of all project members, roles, skills, staff development etc. and encouragement of positive team dynamics.
▲		Team facilitator	Facilitate team members and nurture positive team dynamics. Apply principles of work-based learning or action learning. Operate as an equal team member while being mindful of team process and offering guidance rather than driving the team.
▲		Mentor evaluator	Offer specialist assistance for various roles within the project team. Review and evaluation of development work to provide feedback and offer opportunities for discussion of issues and inspire new ideas etc.
▲	▲	Web Site co-ordinator, developer, maintainer, etc.	Management of web site. This may be performed by a number of people fulfilling different roles including maintenance, design, development, administration, security etc.

Skills categories
Information Technology
Subject Expertise Fundamental Awareness and Competence within Internet Environment
Fundamental Awareness and Competence within Internet Environment Creativity and Imagination Key Competencies Project Management/Leadership Skills Change Management
Fundamental Awareness and Competence within Internet Environment Creativity and Imagination Key Competencies Team Facilitation
Fundamental Awareness and Competence within Internet Environment Creativity and Imagination Key Competencies Project Management/Leadership Skills
Web Management Online Learning Administration Project Management/Leadership Skills

Design	Delivery	Roles	Description/tasks
▲	▲	Learning resources staff	Provide support to online development team in accessing and using resources and information. May also offer tutoring for team members on the use of online tools such as email, browsers, search engines etc.
	▲	Facilitator (lecturer)	Works with and assists students in the learning process as required. Includes facilitation of online delivery. Role of facilitator has a strong learner-centred focus rather than teacher-directed approach to training.
	▲	Senior executives educational managers	Responsible for training organisation and educational program flexibility. Implementation of strategies for supporting, managing and administering flexible delivery.
	▲	Administration staff	Use systems effectively to administer flexible delivery. Support staff and students in the implementation processes of flexible delivery.
	▲	Marketing staff	To raise awareness and promote flexible delivery and flexible learning and the major benefits they offer to learners, enterprises and industries.
	▲	Student services counsellors	Relate directly to students and offer support within the context of flexible vocational education and training.

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Skills categories

Finding Information on Internet
Fundamental Awareness and Competence within Internet Environment
Key Competencies
Internet Applications
Learner Support

Flexible Learning/Diverse Learning Styles
Adult Learning Principles/Philosophies
Subject Expertise
Fundamental Awareness and Competence within Internet Environment
Key Competencies
Online Learning Administration
Learner Facilitation
Learner Mentoring
Learner Support

Flexible Learning/Diverse Learning Styles
Fundamental Awareness and Competence within Internet Environment
Project Management/Leadership Skills
Change Management

Flexible Learning/Diverse Learning Styles
Fundamental Awareness and Competence within Internet Environment
Online Learning Administration

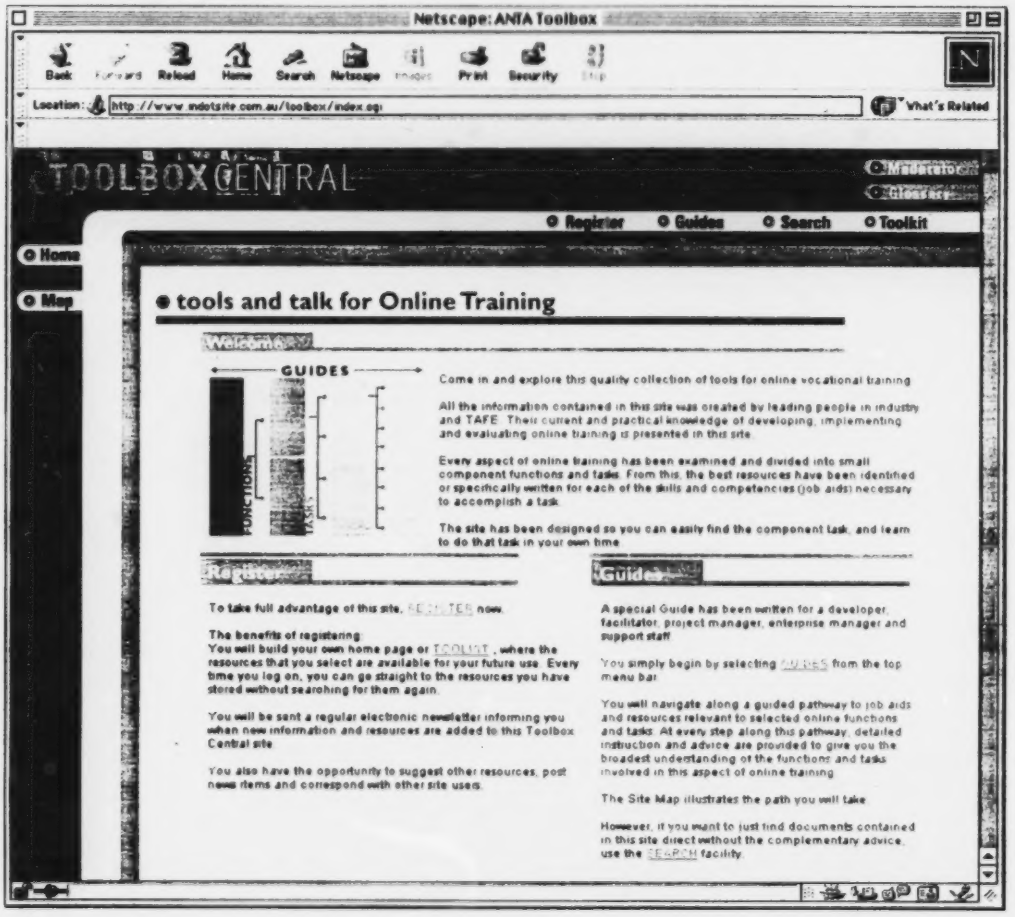
Flexible Learning/Diverse Learning Styles
Creativity and Imagination
Online Learning Administration

Flexible Learning/Diverse Learning Styles
Fundamental Awareness and Competence within Internet Environment
Online Learning Administration
Learner Support

Two key staff development resources

Toolbox Central web site aims to identify the skills required for the whole range of people involved in online delivery. When the site is completed, competencies and a range of resources will be identified for course developers and facilitators, managers, people in industry and those involved in learner induction and support. (http://www.indotsite.com.au/toolbox)

LEARNSCOPE is an ANTA-funded national professional development project focusing on the application of new learning technologies to achieve more flexible learning in vocational education and training. LearnScope promotes a planned approach to professional development where the learning of individuals and teams is directly linked to organisational needs. LearnScope has funded 65 work-based learning projects. It is currently supporting 30 projects throughout Australia. (http://www.learnscope.anta.gov.au/)


Netscape: ANTA Toolbox
Back
Forward
Reload
Home
Search
Netscape
Print
Security
Location: http://www.indotsite.com.au/toolbox/index.cgi
What's Related
TOOLBOX CENTRAL
Moderator
Glossary
Register
Guides
Search
Toolkit
Home
Map
tools and talk for Online Training
Welcome
GUIDES
FUNCTIONS
TASKS
Come in and explore this quality collection of tools for online vocational training.
All the information contained in this site was created by leading people in industry and TAFE. Their current and practical knowledge of developing, implementing and evaluating online training is presented in this site.
Every aspect of online training has been examined and divided into small component functions and tasks. From this, the best resources have been identified or specifically written for each of the skills and competencies (job aids) necessary to accomplish a task.
The site has been designed so you can easily find the component task, and learn to do that task in your own time.
Register
To take full advantage of this site, REGISTER now.
The benefits of registering:
You will build your own home page or TOOLKIT, where the resources that you select are available for your future use. Every time you log on, you can go straight to the resources you have stored without searching for them again.
You will be sent a regular electronic newsletter informing you when new information and resources are added to this Toolbox Central site.
You also have the opportunity to suggest other resources, post news items and correspond with other site users.
Guides
A special Guide has been written for a developer, facilitator, project manager, enterprise manager and support staff.
You simply begin by selecting GUIDES from the top menu bar.
You will navigate along a guided pathway to job aids and resources relevant to selected online functions and tasks. At every step along this pathway, detailed instruction and advice are provided to give you the broadest understanding of the functions and tasks involved in this aspect of online training.
The Site Map illustrates the path you will take.
However, if you want to just find documents contained in this site direct without the complementary advice, use the SEARCH facility.

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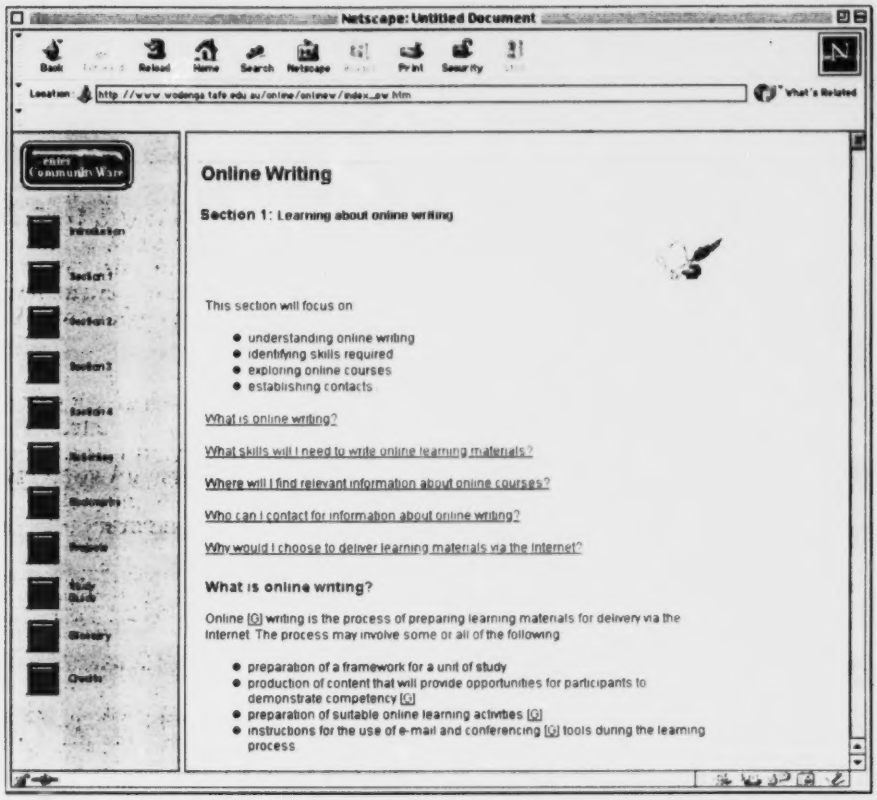
Netscape: Untitled Document
Online Writing
Section 1: Learning about online writing
This section will focus on
understanding online writing
identifying skills required
exploring online courses
establishing contacts
What is online writing?
What skills will I need to write online learning materials?
Where will I find relevant information about online courses?
Who can I contact for information about online writing?
Why would I choose to deliver learning materials via the Internet?
What is online writing?
Online [G] writing is the process of preparing learning materials for delivery via the Internet. The process may involve some or all of the following
preparation of a framework for a unit of study
production of content that will provide opportunities for participants to demonstrate competency [G]
preparation of suitable online learning activities [G]
instructions for the use of e-mail and conferencing [G] tools during the learning process

Staff development programs may take any of the following formats:

- online courses and tutorials such as:
  - Wodonga Online Writing course
  - Learnscope projects
  - Box Hill Teaching and Learning Online (TALON) program
  - Teaching Online Training Institute (TOTI) developed by a consortium of Victorian TAFE institutes—available as an online course on the Victorian Virtual Campus site
  - Northern Melbourne Institute of TAFE online professional development program
- ANTA-funded programs such as the Flexible Delivery Toolboxes. These 'Toolboxes' are collections of online resources, suggested learning strategies and supporting material to support the online delivery of vocational education and training based on national training packages. Ten have been completed to support training packages such as hospitality, tourism, metal and engineering, community services, agriculture, information technology, workplace training and assessment, printing and graphic arts, and water. Others will be developed as funds are available

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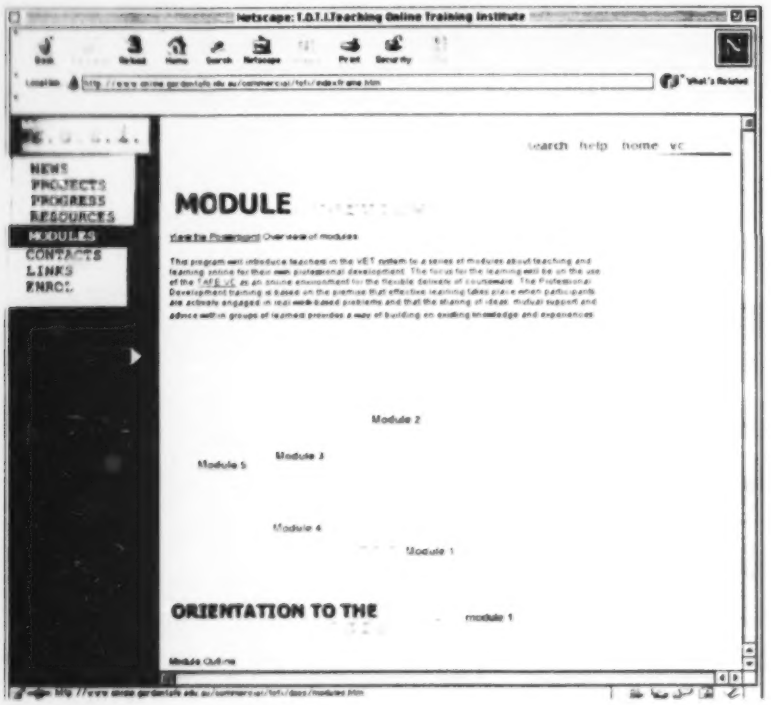

- networks such as the TAFE SA ONE network
- conferences such as Networking97 and Networking99
- locally organised workshops and seminars based around local needs (specific technology, software etc.)
- email discussion lists such as EdWebDev and ONLINE-ED (see references for how to subscribe) and web sites such as trdev-aus (http://cleo.murdoch.edu.au/gen/trdev-aus/trdev_courses.html)

Although online delivery is still a new form of flexible delivery in the VET sector in Australia, some evaluation of programs has occurred. An early evaluation of online communication studies at Adelaide Institute of TAFE (Goldman et al. 1996) found that overall students who studied online felt they benefited from using online technologies and were more satisfied with the environment than the control group of face-to-face students. The key issues for teachers were seen to be adequate access to equipment and training, and the commitment to collaborative learning strategies.

Similarly, Margaret Aspin at Northern Melbourne Institute of TAFE has found that there are excellent outcomes for learners and teachers including:

- increased understanding of the subject
- increased computer skills of both the online tutor and the students
- peer-to-peer learning was a major component of the teaching model
- more opportunities to communicate and provide support for each other
- greater ability to keep up with the subject
- computer-based assessment method actually facilitated critical thinking and analysis
- assessment tasks could be completed when the students felt they were ready
- the average mark for part-time students in 1996 and 1997 using conventional delivery methods was 72%. Online flexible delivery mode was 84%

The components of evaluation instruments should measure factors such as improved:

- access to educational experiences
- access to lecturer
- participation in a course
- ability to apply learning
- level of interest and involvement
- synthesis of elements of the course
- comfort with use of computer
- group collaboration
- overall quality (Hiltz 1995, p.73)

The success factors that will be critical in developing effective online delivery programs will include:

- ensuring the online delivery strategy is compatible with the institution's long-term educational goals
- selecting the right people, namely committed, enthusiastic academic and support staff and an effective high-level champion
- ensuring there is a well-developed institutional information technology infrastructure
- undertaking staff and student training, including change management and an understanding of how online delivery really works
- ensuring efficient, 24 hour, seven day a week access to reliable technology with a good user interface and ongoing maintenance of modules
- evaluating what works and what does not

In addition, as online delivery can be a costly and complex exercise, the reasons for deciding to deliver courses online must be that this methodology is the best way to meet the kind of learning that we want our learners to achieve.

Glossary

These online terms have been used in this publication. The 'Online writing' course provided by Wodonga Institute of TAFE includes a comprehensive glossary and can be found at
http://www.wodonga.tafe.edu.au/online/onlinew/index_ow.htm

Asynchronous communication – Online discussion between participants at different times

Bandwidth transmission – Capacity of a telecommunications system

Browser – Software program to access the Internet (e.g. Netscape, Microsoft Explorer)

Bulletin board – Computer-based meeting place

Download files – Transfer files from one computer to another

Email – Electronic mail for communicating using a computer network

FTP (File Transfer Protocol) – Application for transferring files between computers

Home page – Introductory page of a web site

HTML (HyperText Markup Language) – Used to create documents on the Internet

Hypertext – Links between text (and files or graphics) on a web site

Internet – The network of networks and associated routing software, which allows users to communicate via email, access information databases and transfer text, graphics, video and voice files

Intranet – Network within an organisation and associated routing software, which allows users to communicate via email, access information databases and transfer text, graphics, video and voice files

ISP – Internet Service Provider providing connections to the Internet

LAN (Local Area Network) – Computer network limited to a building or specific area

Listserv – Automated mailing or communication list

Modem – Device that enables computers to link using the phone lines

Online – Using the Internet for communicating and learning

Protocol – Formats and rules computers must follow to exchange messages

Server – Computer that holds all the learning materials such as study guides and learning resources

Synchronous communication – Online discussion between participants at the same time

URL (Universal Resource Locator) – The 'address' of files on servers (generally in the format http://www...)

Web site – Web pages stored on a server

World Wide Web – Network of web sites connected via the Internet

ANTA 1998, *TAFE teachers online: Professional development for online delivery*, ANTA, Brisbane. This report outlines the findings of a project commissioned by the Office of Training and Further Education (OTFE) in Victoria. The main focus of the project was to identify the skill areas that TAFE teachers and trainers would need to learn in order to work in an online environment. The project also identified professional development models, current provision and options for future development. The report contains a literature review of other research and findings in the area.

Atkinson, Roger et al. 1999, 'Course server software for online teaching', paper included in the Library of the online Networking99 conference. This paper reviews the use of various integrated software programs for online delivery across Australia.

Barker, Philip 1999, 'Using Intranets to support teaching and learning', *Innovation in Education and Training International*, vol.36, no.1, pp.3–10. A description of some of the ways that Intranets can be used to facilitate online delivery. Case studies are used to describe various instructional techniques and conclusions drawn about future applications of the technology.

Bates, Tony 1997, 'The impact of technological change on open and distance learning', *Distance Education*, vol.18, no.1, pp.93–109. Using communications technology to deliver courses is providing the catalyst for institutions to address issues of the impact of technology on educational outcomes, the implications for learners and learning, and the implications for organisational change.

Centre for International Research on Communication and Information Technologies (CIRCIT), 1999, *Preferred standards to support national cooperation in applying technology to VET*, ANTA, Brisbane. An outcome of funding provided under the 1997 National Flexible Implementation Plan, this report provides guidelines for the acquisition and use of technology for PCs, email, Internet and Intranets, videoconferencing and data. The standards aim to maximise opportunities for flexibility and collaboration by allowing everyone's technology to 'talk' to each other. A copy of the standards is also available (at August 1999) on http://www.vicnet.net.au/~neptune.

Choosing & Using Technologies in Education & Training is a web site which provides up-to-date discussion, reading lists, case studies and checklists for decision-making regarding online technology, within a context of good educational practice. [http://avoca.vicnet.net.au/~cute/]

Collins, Marie and Berge, Zane (eds) 1995, *Computer mediated communication and the online classroom. Volume 2: Higher education*, Hampton Press, Cresskill, NJ. As the second in a three-volume set which examines the merging of computers and telecommunications technologies to support teaching and learning, this volume focusses on several themes relating to both in-class and distance learning. These issues include the accommodation of different learning styles and the empowerment of learners regardless of physical challenges or social and cultural differences. The authors discuss particular applications of computer mediated communication technologies and the benefits and problems experienced in practical situations.

Comparisons of online course delivery software products 1999. Various features and tools of a range of commercial online course delivery software products are compared and benchmarked.
[http://multimedia.marshall.edu/cit/webct/compare/comparison.html]

EdWebDev (email list). EdWebDev is an open, unmoderated mailing list for educational web developers working primarily in the VET sector. Its main purpose is to provide a forum for discussing issues relating to the development of online educational materials and online delivery platforms. To SUBSCRIBE send 'subscribe edwebdev' to macjordomo@vc.tafensw.edu.au
To UNSUBSCRIBE send 'unsubscribe edwebdev' to
macjordomo@vc.tafensw.edu.au
To COMMENT/CONTRIBUTE send email to edwebdev@vc.tafensw.edu.au

Farrell, Glen M 1999, *The development of virtual education: A global perspective*, The Commonwealth of Learning, Vancouver. To examine the degree to which the 'virtual institution' has really arrived, the Commonwealth of Learning, with funding from the British Department for International Development, commissioned an international group of experts to study current trends in the virtual delivery of education. The report provides an examination of practices across the world and concludes with a number of suggestions for policy-makers and education leaders regarding the development of models for vitual learning. Chapter 10 by Suellen Tapsell and Yoni Ryan, 'Virtual education institutions in Australia: Between the idea and the reality', provides a cross-sectoral overview of virtual education activities in Australia.

Forsyth, Ian 1996, *Teaching and learning materials and the Internet*, Kogan Page, London. The development of well-designed and appropriate learning materials is critical to students' success in learning online. In addition to discussing instructional design issues in relation to online materials, the author outlines the specifications for well-designed online forms and the cost implications of online delivery.

Freeman, Mark 1997, 'Flexibility in access, interaction and assessment: The case for web-based teaching programs', *Australian Journal of Educational Technology*, vol.13, no.1, pp.21–39. The objective in this paper is to report the outcomes of a web-based teaching program trial involving 550 undergraduate business students. The platform used for the program was TopClass and while prior Internet experience among the students was minimal, the students believed that the program provided increased support for their learning, improved access and interactivity. The range of evaluation instruments used during the trial included surveys and focus groups.

Freeman, Richard 1997, *Managing open systems*, Kogan Page, London. The author gives an overview on the management of open learning and the support systems needed. Areas covered include information, guidance and enrolment, learning resources, learner support systems. tutor support systems, and assessment systems.

Gallasch, P.A. 1998, *The virtual campus: Virtually everywhere*, ANTA, Brisbane. Using the development of the online course for the Community Services program at Spencer Institute of TAFE, this booklet documents the establishment and operation of the virtual campus. Seven principles are identified which underpin the development of the virtual campus: leadership, planning, information and analysis, people, customers, processes, products and services, and organisational performance.

Goldman, Sue 1997, 'Change management for online delivery: Strategies for organisation moving to online delivery', paper presented at Networking97: Shaping the Online Learning Environment, ANTA Flexible Delivery Conference, Adelaide, 19–21 November 1997. Several models for change management are outlined, each with its own unique rationale, and the perceived benefits that its application can provide for the organisation.
[http://www.tafe.sa.edu.au/lsrsc/one/natproj/cm/cmint.htm] 11/12/97

Goldman, Sue et al. 1996, *Evaluating online delivery: Communication studies at Adelaide Institute*, Adelaide Institute of TAFE, Adelaide. An evaluation project involving four Communications Studies classes on campus at Adelaide Institute was undertaken during semester 2, 1996. Two classes used traditional face-to-face delivery and two used online delivery. Evaluation occurred at three points during the semester and the report concludes that the online students were not disadvantaged but reported a wider range of skills development.

Harasim, Linda 1989, 'Online education: A new domain', in *Mindweave: Communication, computers and distance education*, pp.50–62, Robin Mason & Anthony Kaye (eds), Pergamon Press, Oxford. This article looks at online education as a unique domain of educational interaction, which shares attributes with face-to-face and distance learning, but is quite distinct in its implications for learning. The key attributes characterising this new domain are that it is an asynchronous (time independent), place independent and many-to-many interactive communication medium.

Harasim, Linda et al. 1996, *Learning networks: A field guide to teaching and learning online*, MIT Press, Cambridge, Mass. This book is a comprehensive guide to the use of computer mediated communications technologies across all levels of education. It describes learning networks that are currently available as well as providing new examples of networks that can be created. Part 1 provides a selected survey of existing networks; part 2 deals with the design and implementation of learning networks as well as the role of teachers and learners; part 3 considers future uses of computer mediated communications technologies.

Hiltz, Starr Roxanne 1995, *The virtual classroom: Learning without limits via computer networks*, Ablex, Norwood, NJ. In reporting on the project 'Tools for the enhancement and evaluation of a virtual classroom', the author provides theoretical and practical frameworks for online delivery. Each section is illustrated with examples, case studies and detailed analysis of the findings of the project. Part 1: 'Foundations' and part 2: 'Teaching in a virtual classroom: The perpetual professor' are easy-to-read sections which cover many of the basics for establishing an online learning environment. Hiltz's framework rests on the collaborative learning model and a comprehensive review of the literature in this area is included as chapter two.

Houlden, Jacquie and Houlden, Wayne 1999, *Best practice in online delivery: A report outlining current best practices in the online delivery of training*, TAFE NSW, Sydney. A comprehensive report which includes sections on instructional design for online delivery, details of course design and content development, methods which will ensure accessibility to web resources and online tools. The final section 'Equipping for online course delivery' covers aspects of learner and trainer readiness for online delivery and system requirements. http://www.jansol.com.au/products/research/default.asp

Lambert, Susan and Williams, Rhys 1999, 'A model for selecting educational technologies to improve student learning', Flinders University of South Australia, Adelaide, (unpublished). While focussing on university issues, the authors review current literature to develop a model for analysing existing and new courses and selecting appropriate teaching and learning technology, taking into account the management and organisational issues, and constraints facing teachers.

Le Cornu, Peter 1999, 'The role of college management in moving to flexible learning', paper included in the Library of the online Networking99 conference. Flexible learning is the foundation of online delivery. This paper explores how leadership, vision and support are critical skills for managers to facilitate effective flexible delivery within an institution.

LifeLong Learning Associates 1999, 'Strategic analysis: Improving teaching and learning in Australian school education through the use of information and communications technologies'. A discussion paper for the Schools Advisory Group of Education Network Australia (EdNA) which discusses how schools need to change to meet the needs of young people entering the information society of the 21st century. It sets out key issues that school educators must address if they are to maximise the benefits of new technologies for learning. [http://www.edna.edu.au/EdNA]

Mason, Robin 1997, 'Advancing opportunities for enhancing learning', keynote presentation at Networking97. A brief overview of the key principles which underpin the use of technologies for learning. [http://www.nw97.edu.au/public/papers/mason.html]

Mason, Robin and Kaye, Anthony (eds) 1989, *Mindweave: Communication, computers and distance education*, Pergamon Press, Oxford. The use and educational implications of computer mediated communications technology are explored from various institutional perspectives. Although now 11 years old, the text provides a foundation for those involved in online delivery.

Mitchell, John 1999, 'Business models for developing online learning systems: Findings from current research', paper included in the Library of the online Networking99 conference. This paper is an informal discussion of the findings or research undertaken over the last two years. The author argues that 'online learning systems need to be underpinned by sound business models which take into account educational outcomes, the nature of the medium, the profile of users, the need to be cost effective, the need to cater for different markets and the importance of appropriate marketing strategies'.

Mitchell, John and Bluer, Robert 1997, 'A planning model for innovation: New learning technologies', OTFE, Melbourne. Eight case studies and a comprehensive literature formed the foundation for an analysis of how the use of communications technologies can improve learning outcomes for the VET sector. A planning model is identified which includes performance indicators and checklists for implementation.

Moffatt, Sue 1997, 'Horses for courses: Choosing optimal ways of delivery distance education', in *Open, flexible and distance learning: Education and training in the 21st century*, Jo Osborne et al., Proceedings of the 13th biennial forum of Open and Distance Learning Association of Australia, ODLAA, Launceston, pp.323–329. This paper discusses some of the advantages and disadvantages of distance education. The section on online delivery is a review of the literature in relation to advantages, costs, training and barriers.

Office of Training and Further Education, Victoria 1996, *From chalkface to interface*, OTFE, Melbourne. The use of the Internet and other networked technologies as a means to facilitate learning is of increasing interest to both educators and government. This publication provides a basis for successful use of the technologies through the design of a best practice framework for use by practitioners involved in online development and delivery. Six principles are identified against which projects can be evaluated and include success factors, checklists and case studies.

Oliver, Ron and Omari, Arshad 1997, 'Using the WWW to support distance education and open learning', in *Open, flexible and distance learning: Education and training in the 21st century*, Jo Osborne et al., Proceedings of the 13th biennial forum of Open and Distance Learning Association of Australia, ODLAA, Launceston, pp.354–359. The implications for learning using online delivery are discussed under the categories of information access, interactive learning, networked learning and WWW development. The model is also used for the development of the learning environment and materials.

ONLINE–ED (email list). A free moderated mailing list delivered to over 1800 subscribers in 40 countries each Monday during Australian higher education semesters, providing topical articles from invited authors, along with an overview of current activities in online education with an emphasis on the World Wide Web—edited by Graeme Hart at Whirligig.
To SUBSCRIBE send 'subscribe online-ed' to mailserv@unimelb.edu.au
To UNSUBSCRIBE send 'unsubscribe online-ed' to mailserv@unimelb.edu.au
To COMMENT/CONTRIBUTE send email to online-ed–request @unimelb.edu.au

Reinecke, Ian 1997, 'The emerging telecommunications environment: Opportunities for the VET sector', paper presented at Networking97: Shaping the Online Learning Environment, ANTA Flexible Delivery Conference, Adelaide, 19–21 November 1997. A seminal paper which outlines the opportunities for use of technologies in the VET sector. These are identified as 'space and place', transformation, flexible learning, marketing, support services, and partnering. [http://www.nw97.edu.au/public/papers/reinecke.html] 11/12/97

Roberts, Steve 1999, 'Strategies for implementing a support and training helpdesk for online development and delivery', paper included in the Library of the online Networking99 conference. Implementing successful strategies to support online delivery and development is about creating a teaching and learning community within an organisation that networks people, accepts change, and develops a culture that shares a common vision. Support and training of staff involved in online development and delivery is a key component of this community.

Rowntree, Derek 1992, *Exploring open and distance learning*, Kogan Page, London. This book is designed to help teachers, trainers and managers to adopt or develop open and distance learning methods in their work. As one of the 'basic texts' on open learning, the sections are equally relevant in online applications as in print-based methodologies.

Street, Penny and Bradshaw, Jacqueline 1997, 'The Open Learning Agency: The Open University and Open College online project', *DEOSNEWS*, vol.7, no.9. This paper describes the OU/OC online project which was implemented during 1995. The keys to the success of the project are described as the use of well-thought-out graphic and instructional design of the environment; partnering of online tutors and instructional designers in the initial design phases; consistency between courses in the use of the online environment; technical support for tutors and students; adequate student and tutor training in using the technology and established links to the library and student services infrastructure. [http://www.cde.psu.edu/ACSDE] October 3, 1997

TAFE SA Online Network for Education 1999, 'Newsletter'. The newsletter is published occasionally and includes brief articles and summaries of online initiatives in TAFE in South Australia.

Toolbox Central web site. Set of resources which identify the skills required for the whole range of people involved in online delivery. When the site is completed, competencies and a range of resources will be identified for course developers and facilitators, managers, people in industry and those involved in learner induction and support. [http://www.indotsite.com.au/toolbox]

University of Victoria. Division of Continuing Studies 1997, *LETT'97 Leading edge training technologies: Training technologies for the future: Opportunities and challenges*, fifth annual conference, March 18 & 19, 1997, University of Victoria, British Columbia. The conference papers present and discuss a range of issues: mobile learning; the new global learning workforce; the delivery of on-site learning whether in the home or in the workplace; the uses of mentoring and peer tutoring; issues of gender and use of technology; and initiatives that contribute to a continuous learning culture within an interactive contextualised learning environment. A number of the papers explore new paradigms for Internet-based learning environments and describe case studies of web course delivery and the effect on students and instructors.

Webb, Greg 1997, 'About online learning' (unpublished). A brief paper which outlines the key principles underlying the development of an online learning program at Sydney Institute of Technology. (Greg is now located at OTEN.)

Webb, Greg 1999, 'The economics of online delivery', paper included in the Library of the Online Networking99 conference. An investigation into the costs and benefits of online delivery at OTEN. The paper includes charts which outline the advantages and disadvantages for teachers and students taking part in online courses and draws some preliminary conclusions about the economics of online delivery.

Western Melbourne Institute of TAFE. Open Training Services 1996, *Selected papers: Online technology and VET delivery seminar*, OTS seminar series, RR006, Western Melbourne Institute of TAFE, Footscray, Victoria. The seminar covered new developments in the system-wide application and management of online technologies; the use of online services for education and training management and professional development; and ways in which the Victorian State training system is currently applying online technologies through various EdNA pilot projects.

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The Getting to grips with ... series has been written for the general reader who wants to understand important trends in vocational education and training.

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